MULTI-CHAMBERED STRUCTURE

CROSS REFERENCE TO RELATED APPLICATIONS - Not Applicable

Statement Regarding Federally Sponsored Research or Development – Not Applicable

Reference to Microfiche Appendix – Not Applicable

BACKGROUND OF THE INVENTION

1. This invention is directed to a multi-chambered structure, and in particular to a structure having an intermediate platform surmounted by a chamber occupying a relatively major portion of the platform upper surface, and a plurality of smaller chambers on the underside of the platform. The preferred construction of the chambers is single panel monocoque. The lower chambers may be buoyancy chambers.

2. In my earlier U.S. patent, No. 6,134,849 of Oct 24, 2000, which is incorporated herein by way of reference, is disclosed a prefabricated self-supporting paneled structure system providing dome-like monocoque structures. Triangular or rectilinear flat panels are bent along their edges, forming flanges. The so-formed panels are fastened together at the flanges, and may be reinforced at the junctures of the flanges, providing a dome-like structure. This differs from other geodesic-type structures that are usually composed of a skeleton of ribs, covered separately by flat or curved panels or fabric sheets.

BRIEF SUMMARY OF THE INVENTION

The present invention provides a multi-chambered structure, and in particular a structure having an intermediate platform surmounted by at least one chamber occupying a relatively major portion of the platform upper surface, and a plurality of smaller chambers on the underside of the platform. The preferred construction of the chamber walls is single panel

monocoque. The lower chambers may be buoyancy chambers.

The structure may be insulated and reinforced by the application of an interior layer of polycarbonate foam.

In a water-born vessel embodiment, three or more underside chambers in mutually spaced apart relation constitute flotation chambers on which the vessel is supported. The spherical or partially spherical form of the wetted surfaces provides efficient buoyancy, and promotes effective streamlining for ease of movement over the water.

The adoption of a triangulated geometry provides great stability.

The substantially spherical form of the upper compartment, allied to the discontinuous "hull" formation minimizes wind resistance. The substantially spherical forms above and below the deck are equally efficient in relation to head winds and seas, and to quartering and following winds and seas. In the case of ocean-going transportation, a train consisting of a multiplicity of such vessels in connected relation overcomes the destructive environment encountered by orthodox vessels of extended length, when unusual wave forms arise.

The exposed surfaces of the structure, both anterior and posterior may be sealed and protected by the application of a protective outer coating of plastic, including such as a fiberglass coating. This coating can also serve to smooth over the slight discontinuities of the panel joints, as well as to more closely approximate spherical surfaces.

It is contemplated that the major surface portion of the individual panels may be formed from planar to spherical if so desired, such as by hydroforming, so as to smoothly conform the assembled panels to the selected spherical radius.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

Certain embodiments of the invention are described by way of illustration, without

limitation thereto other than as set forth in the accompanying claims, reference being made to the accompanying drawings, wherein:

Figure 1 is a perspective view looking down from a front quarter, of a first boat embodiment of the present invention;

Figure 2 is a plan view looking down onto the Figure 1 embodiment;

Figure 3 is a schematic perspective view from below of a second embodiment of the invention; and

Figure 4 is a perspective interior view showing details of a typical structure, including a series of panels in assembled relation.

DETAILED DESCRIPTION OF THE INVENTION

Referring to Figure 1 and 2, a structure 10 in accordance with the present invention has a substantially planar, triangular deck portion 12, with an upper, anterior structure 14 and three lower, posterior structures 16, 18, 18. The deck sheathing has been omitted in order to show the underlying framework 19.

The Figures 1 and 2 embodiment has a "bow" portion 20 (as of a boat), with the posterior structure 16 in underlying, supporting relation therebeneath.

The "port " and "starboard " corner portions 22, 24 of the deck 12 overly the respective posterior structures 18

The anterior structure 14 has portals 26, 26 that open onto the respective deck portions 22, 24. Viewing windows 27 are spaced around the structure 14.

Doors such as the sliding glass patio type (not shown) are contemplated for a houseboat vessel embodiment.

Deck extensions 28, 28 provide a walkway around the structure 14, and a set of

steps 30, which in use would normally be above water level, facilitate accessing the deck 12.

Two attachment points 32, 32 are provided to which outboard motors may be mounted.

Each of the structures may be insulated and reinforced by the application of an interior layer of polycarbonate foam, such as General Latex & Chemical Corp's "Vultafoam" (TM.).

The deck portion 12 preferably consists of a framework 19 of U-channels in welded assembly, with upper and lower sheathing such as marine plywood secured to the framework 19.

Also contemplated is the provision of a removable floor panel or panels, within the structure 14, for use in fishing in inclement weather, or through ice.

Safe use in arctic or semi-arctic conditions, as exist in northern States, Canada, the Yukon, Nunavit and Canada's North West Territories is anticipated, on account of the low immersion of the posterior structures 16, 18, 18 and their substantially spherical, smooth surfaces that would tend to avoid entrapment under freeze-up conditions.

Use of structures incorporating the deck 12, the anterior structure 14 and posterior structures 16, 18 or equivalent are contemplated in a range of sizes, including a child's play toy.

In Figure 3, the structure 14 omits certain of the details of Figures 1 and 2, such as doors and windows, and shows a fully triangular deck 12.

In one embodiment, the anterior structure 14 is 14 feet in diameter; and the posterior structures 16, 18, 18 are 7-feet in diameter. In the form of a vessel such as

a houseboat, this provides a startling 615 square feet of enclosed living space, which can be readily partitioned.

It will be understood, in the case of significantly larger vessel embodiments that the "igloo" form of the anterior structure 14 can be readily modified to provide a range of shapes, including connected hemispheres, to meet specialized cabin/cargo requirements, while retaining the strength and simplicity of a monocoque structure.

The posterior structures 16, 18, 18 may be of different form and number, while retaining many of the advantages of the illustrated embodiments. The buoyant capacity of the overall structure 10 is such that the posterior structures 16, 18, 18 and their equivalent may be utilized appropriately for safe storage of fuel, food, water and sewage, etc

Access from the anterior structure 14 to the respective .posterior structures may be readily provided through the floor of the deck 12.

Referring to Figure 4, in addition to a series of rectangular panels 38 connected in mutually abutting relation, the manner is shown of incorporation of ribs 40 and the attachment of other structural members 42, in forming the monocoque structure, and its attachment to the frame members 19 of the deck.